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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.  | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------|------------------|
| 10/780,265   | 02/16/2004  | James W. Rudolph     | 4865 / 134           | 2216             |
| 7590   | 05/19/2006  |                      | EXAMINER             |                  |
| Helen A. Odar-Barley Snyder<br>PO Box 1559<br>Lancaster, PA 17608-1559 |             |                      | ABRAMOWITZ, HOWARD E |                  |
|  |             |                      | ART UNIT             | PAPER NUMBER     |
|  |             |                      | 1762                 |                  |

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/780,265             | RUDOLPH ET AL.      |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Howard E. Abramowitz   | 1762                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

1) Responsive to communication(s) filed on 16 March 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

4) Claim(s) 1-46 is/are pending in the application.  
 4a) Of the above claim(s) 1-33 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 34-38 and 41-46 is/are rejected.  
 7) Claim(s) 39 and 40 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 16 February 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 6/14/04.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election of group II claims 34-46 in the reply filed on 3/16/06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 34, 35, 38 and 42-45 are rejected under 35 U.S.C. 102(e) as being anticipated by Daws et al. (US Patent Application Publication No. 2003/0035893)

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Referring to claims 34 and 42, Daws et al. discloses a chemical vapor infiltration process in the background section for densifying porous structures. It discloses a conventional method but states that a pressure gradient does exist (paragraph 4). It consists of providing the steps of forming a stack of ring like substrates with ring like spacers between each adjacent porous structures, disposing the stack between a top and bottom plate in a furnace defining an enclosed cavity extending from the bottom plate and terminating proximate the top plate (figure 1), the spacers allow for fluid communication between the enclosed cavity and the outer volume, allowing gas to flow through the channel while maintaining a "relatively low" pressure gradient (paragraph 4) and densifying the porous substrates.

Referring to claims 35, 44 and 45, the ring like spacers contain a plurality of channels providing fluid communication between the enclosed cavity and the outer volume (paragraph 4).

Referring to claim 38, placing the spacers in between the porous structures regulates pressure difference between the enclosed cavity and the outer volume.

Referring to claim 43, the concentration of the gas in the enclosed cavity will be higher than the concentration of gas in the outer volume because of the slight pressure drop.

Alternatively.

Referring to claims 34 and 42, Daws et al. discloses a chemical vapor infiltration process in the for densifying porous structures using a pressure gradient method (paragraphs 14 and 28). It consists of providing the steps of forming a stack of ring like substrates with ring like spacers between each adjacent porous structures, disposing the stack between a top and bottom plate in a furnace defining an enclosed cavity extending from the bottom plate and terminating proximate the top plate (figure 1), a bottom gas distributor is provided at the bottom of the stack allowing for fluid communication of the inner volume and the outer volume (figures 1-4, paragraph 27).

Referring to claim 38, the gas distributor (24) controls the flow of gas around the stacks of substrates.

Referring to claim 43, the concentration of the gas in the enclosed cavity will be higher than the concentration of gas in the outer volume because of the pressure drop.

Claims 34, 35, 38 and 42-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Christin et al (US Patent No. 5,904,957).

Referring to claims 34 and 42, Christen et al. discloses a method for densifying porous structures inside a furnace using a conventional CVI/CVD process. However as taught above the spacers used in the conventional process do create a slight pressure drop. It consists of providing the steps of forming a stack of ring like substrates with ring like spacers between each adjacent porous structures, disposing the stack between a top and bottom plate in a furnace defining an enclosed cavity extending from the bottom plate and terminating proximate the top plate (figure 1), the spacers allow for fluid communication between the enclosed cavity and the outer volume, allowing gas to flow through the channel while maintaining a pressure gradient (column 7 lines 38-54) and densifying the porous substrates.

Referring to claims 35, 44 and 45, the ring like spacers contain a plurality of channels providing fluid communication between the enclosed cavity and the outer volume (paragraph 4).

Referring to claim 38, placing the spacers in between the porous structures regulates pressure difference between the enclosed cavity and the outer volume.

Referring to claim 43, the concentration of the gas in the enclosed cavity will be higher than the concentration of gas in the outer volume because of the slight pressure drop.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 36, 37 and 46 are rejected under 35 U.S.C. 103(a) as being obvious over Daws et al or Christin et al.

The applied reference (Daws et al.) has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer

in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Referring to claims 36, 37 and 46 Daws et al. or Christin et al. does not disclose the density of the structures before or after CVI/CVD treatment or the porosity of the porous structure after densification, however these features are result effective variables as the conditions that the CVI/CVD was run and the initial composure of the porous structures would determine the resultant product. Accordingly, it would have been obvious to one of ordinary skill in the art to modify the operating conditions and initial composure of the porous substrates to values which would result in the claimed products being formed especially in the absence of a showing of criticality for using these values.

Claims 39 and 40 rejected under 35 U.S.C. 103(a) as being unpatentable over Daws et al in view of Golecki et al. (US Patent No. 5,348,774).

Referring to claim 39, Daws et al. teaches all of the features of this claim as discussed above except it does not teach placing a pressure relief valve between the inner and outer sides of the stack of substrates. However, Golecki et al. teaches that using a pressure release valve between the inside of the gas inlet chamber and the outside of the gas inlet chamber is useful as a safety device (column 6 lines 40-47). Accordingly it would have been obvious that if a pressure gradient is present between

the inside and outside of the stack of substrates that placing a pressure relief valve between the two sides would effectively act as a safety device.

Referring to claim 40, it would have been obvious to adjust the setting on the pressure relief valve to open at the claimed values through routine experimentation. Especially in the absence of a showing of criticality for using the claimed values for the pressure gradient.

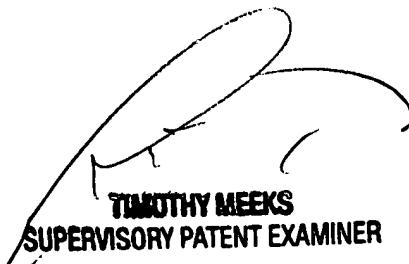
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard E. Abramowitz whose telephone number is 571-272-8557. The examiner can normally be reached on monday-friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*H EAB*



**TIMOTHY MEEEKS**  
**SUPERVISORY PATENT EXAMINER**